

## WHAT IS CLAIMED IS:

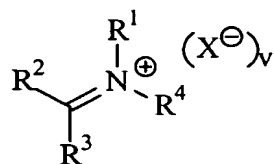
1. A method for laundering comprising contacting a fabric in need of cleaning with an organic catalyst by a controlled availability method.

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2. The method according to Claim 1 wherein said organic catalyst is selected from the group consisting of:

a) aryliminium cations and aryliminium polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [I]:

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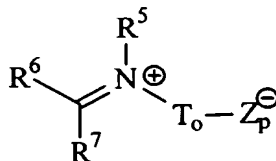


[I]

where  $\text{R}^2$  and  $\text{R}^3$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $\text{R}^1$  and  $\text{R}^4$  are selected from substituted or unsubstituted, saturated or unsaturated radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals; and  $\text{X}^-$  is a suitable charge-balancing counterion; and  $v$  is an integer from 1 to 3;

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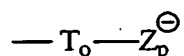
b) aryliminium zwitterions, which have a net charge of from about +3 to about -3, that are represented by the formula [II]:



[II]

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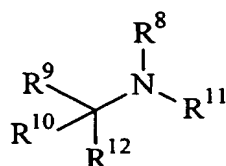
where  $\text{R}^5$ - $\text{R}^7$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:



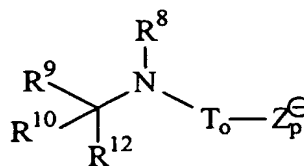
where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of

- 5  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and p is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

c) modified amines, which have a net charge of from about -3 to about +3, that are represented by formulas [V] and [VI]:

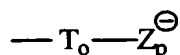


[V]



[VI]

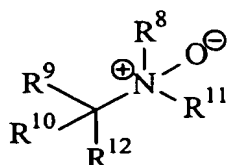
where  $R^9$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^8$  and  $R^{11}$ , when present, are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; and the radical represented by the formula:



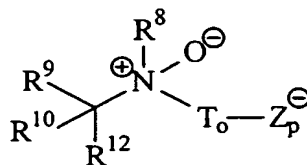
where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of

$-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and p is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

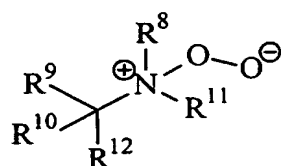
d) modified amine oxides, which have a net charge of from about -3 to about +3, that are represented by formulas [VII]-[X]:



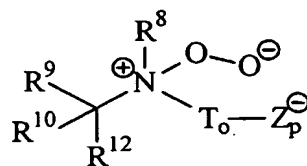
[VII]



[VIII]

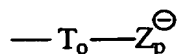


[IX]



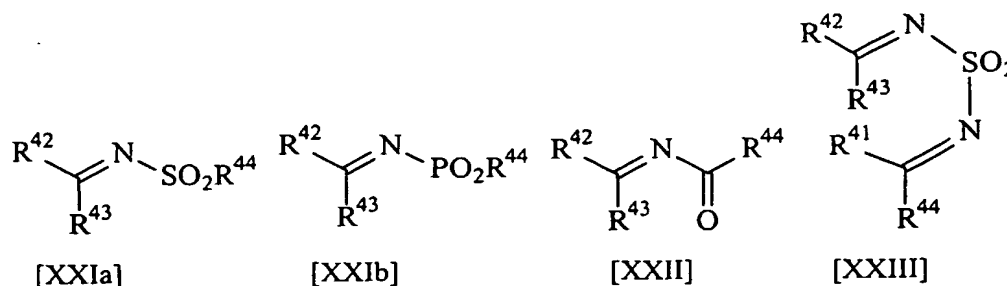
[X]

where  $\text{R}^9$ - $\text{R}^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $\text{R}^8$  and  $\text{R}^{11}$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $\text{R}^{12}$  is a leaving group, the protonated form of which has a  $\text{pK}_a$  value ( $\text{H}_2\text{O}$  reference) that falls within the following range:  $37 > \text{pK}_a > -2$ ; with the proviso that any  $\text{R}^8$ - $\text{R}^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; and also present in this formula is the radical represented by the formula:



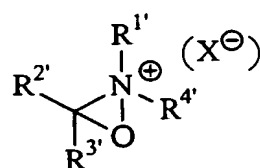
where  $\text{Z}_p^-$  is covalently bonded to  $\text{T}_o$ , and  $\text{Z}_p^-$  is selected from the group consisting of  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$  and  $p$  is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

e) sulfonimines, phosphonimines, N-acylimines and thiodiazole dioxides that are represented by the formulas [XXIa], [XXIb], [XXII] and [XXIII], respectively:



where  $R^{41}$ - $R^{44}$ , when present, are independently selected from substituted or unsubstituted, saturated or unsaturated radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; provided that any of  $R^{41}$ - $R^{44}$  may be joined together with any other  $R^{41}$ - $R^{44}$  to form part of a common ring, including a fused aryl, fused carbocyclic or fused heterocyclic ring;

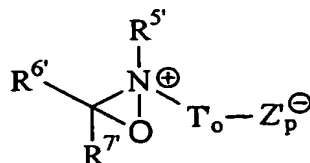
f) oxaziridinium cations and polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [III]:



[III]

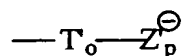
where  $R^{2'}$ - $R^{3'}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{1'}$  and  $R^{4'}$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals; and  $X^-$  is a suitable charge-balancing counterion, preferably a bleach-compatible counterion;

g) oxaziridinium zwitterions, which have a net charge of from about +3 to about -3, that are represented by formula [IV]:



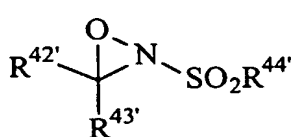
[IV]

where  $R^{5'}$ - $R^{7'}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this  
 5 formula is the radical represented by the formula:

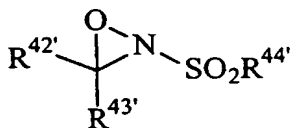


where  $Z_p^{\ominus}$  is covalently bonded to  $T_o$ , and  $Z_p^{\ominus}$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and p is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

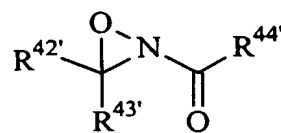
h) oxaziridine sulfonylmines [XXIVa], phosphonimines [XXIVb], N-acylimines [XXV] and thiodiazole dioxides [XXVI] and [XXVII] are represented as follows:



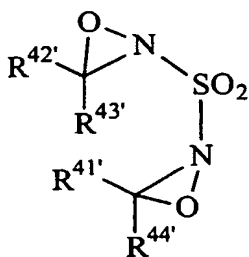
[XXIVa]



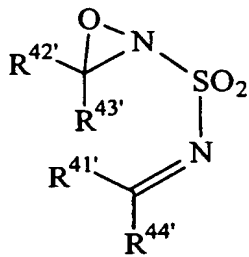
[XXIVb]



[XXV]



[XXVI]



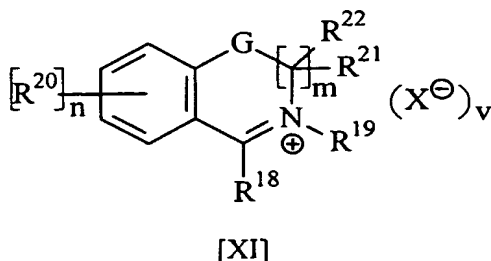
[XXVII]

where  $R^{41'}$ - $R^{44'}$ , when present, are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, carboalkoxy radicals, provided that any of  $R^{41'}$ - $R^{44'}$  may be joined together with any other  $R^{41'}$ - $R^{44'}$  to form  
 25 part of a common ring, including a fused aryl, fused carbocyclic or fused heterocyclic ring; and.

i) mixtures thereof.

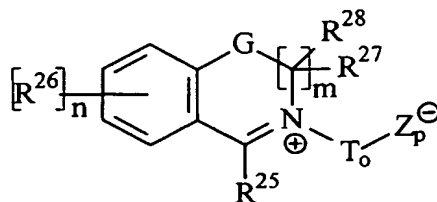
3. The method according to Claim 2 wherein the organic catalyst is selected from the group consisting of:

a) aryliminium cations and aryliminium polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [XI]:



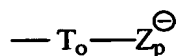
where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>20</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>20</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>18</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>19</sup> is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>23</sup>)-; and (3) -N(R<sup>23</sup>R<sup>24</sup>)-; R<sup>21</sup>-R<sup>24</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyls, cycloalkyls, and heterocyclic rings; provided that any of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> may be joined together with any other of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> to form part of a common ring; any geminal R<sup>21</sup>-R<sup>22</sup> may combine to form a carbonyl; any vicinal R<sup>21</sup>-R<sup>24</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>21</sup>-R<sup>24</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

b) aryliminium zwitterions, which have a net charge of from about +3 to about -3, that are represented by the formula [XII]:

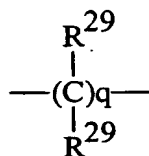


[XII]

where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer  
 5 from 0 to 4; each  $R^{26}$  is independently selected from a substituted or unsubstituted radical  
 selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring,  
 fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy  
 radicals, and any two vicinal  $R^{26}$  substituents may combine to form a fused aryl, fused  
 carbocyclic or fused heterocyclic ring;  $R^{25}$  may be a substituted or unsubstituted radical selected  
 10 from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl,  
 nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in  
 this formula is the radical represented by the formula:



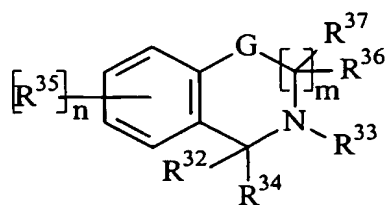
15 where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  
 $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and p is either 1, 2 or 3;  $T_o$  is selected from the group  
 consisting of:



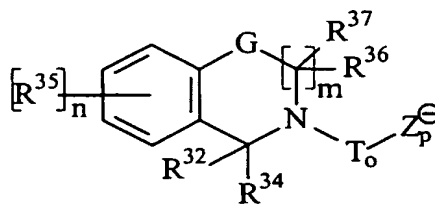
20 wherein q is an integer from 1 to 8;  $R^{29}$  is independently selected from substituted or  
 unsubstituted radicals selected from the group consisting of linear or branched H, alkyl,  
 cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl  
 and amide groups; G is selected from the group consisting of: (1) -O-; (2)  $-N(R^{30})-$ ; and (3)  $-$   
 25  $N(R^{30}R^{31})-$ ;  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  are substituted or unsubstituted radicals independently  
 selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl,  
 alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide  
 groups; any of  $R^{25}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  may be joined together with any other of  $R^{25}$ ,  
 $R^{26}$ ,  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  to form part of a common ring; any geminal  $R^{27} - R^{28}$  may

combine to form a carbonyl; any vicinal  $R^{27} - R^{31}$  may join to form unsaturation; and wherein any one group of substituents  $R^{27} - R^{31}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

c) modified amines that are represented by the formulas [XV] and [XVI]:

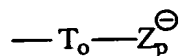


[XV]

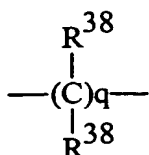


[XVI]

where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $R^{34}$  is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy, peralkoxy, carboxylic, percarboxylic, sulfonato and persulfonato radicals, each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:



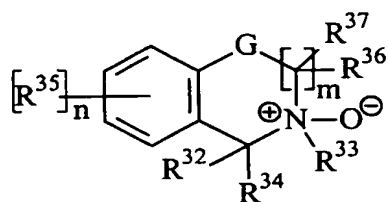
where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$ , and  $a$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:



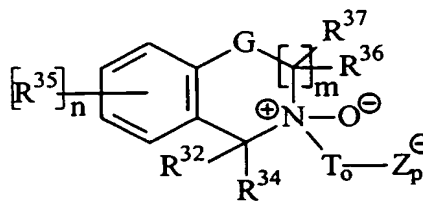


wherein  $q$  is an integer from 1 to 8;  $R^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups;  $G$  is selected from the group consisting of: (1)  $-O-$ ; (2)  $-N(R^{39})-$ ; and (3)  $-N(R^{39}R^{40})-$ ;  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxy, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may be joined together with any other of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  to form part of a common ring; any geminal  $R^{36}$ - $R^{37}$  may combine to form a carbonyl; any vicinal  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may join to form unsaturation; and wherein any one group of substituents  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

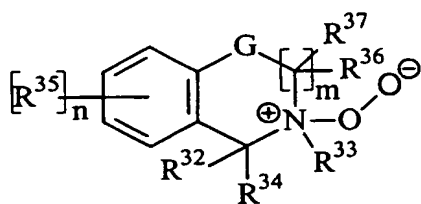
d) modified amine oxides that are represented by formulas [XVII]-[XX]:



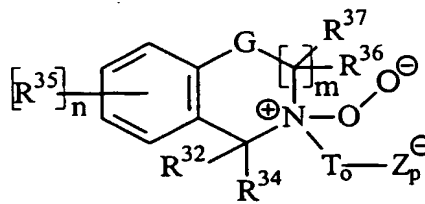
[XVII]



[XVIII]



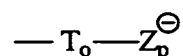
[XIX]



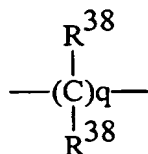
[XX]

where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $R^{34}$  is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy, peralkoxy, carboxylic, percarboxylic, sulfonato and persulfonato radicals; each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl,

fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:



- 10 where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$ , and a is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:

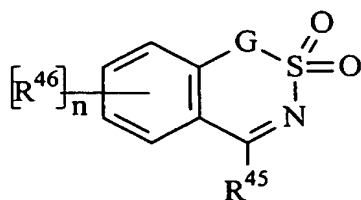


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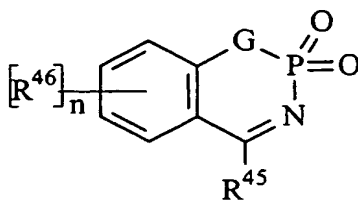
wherein q is an integer from 1 to 8;  $R^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups; G is selected from the group consisting of: (1) -O-; (2) -N( $R^{39}$ )-; and (3) -N( $R^{39}R^{40}$ )-;  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may be joined together with any other of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  to form part of a common ring; any geminal  $R^{36}$ - $R^{37}$  may combine to form a carbonyl; any vicinal  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may join to form unsaturation; and wherein any one group of substituents  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

e) sulfinimines [XXVIIIa], phosphonimines [XXVIIIb], N-acylimines [XXIX] are represented as follows:

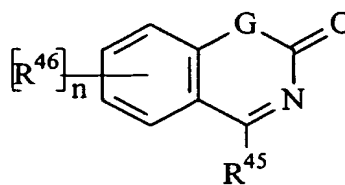
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[XXVIIIa]



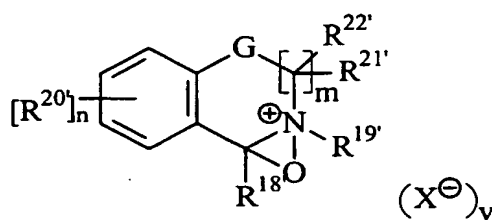
[XXVIIIb]



[XXIX]

wherein each  $R^{46}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{46}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{45}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; G, when present, is selected from the group consisting of: (1) -O-; (2) -N( $R^{47}$ )-; and (3) -N( $R^{47}R^{48}$ )-;  $R^{47}$ - $R^{48}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched  $C_1$ - $C_{12}$  alkyls, alkylenes, alkoxy, aryls, alkaryls, aralkyls, cycloalkyls, and heterocyclic rings;

f) oxaziridinium cations and polyions, which have a net charge of from about +3 to about -3, that are represented by formula [XIII]:

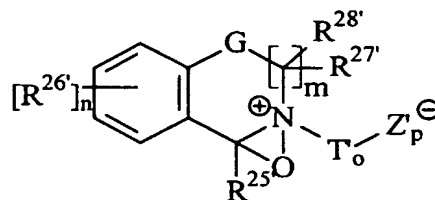


[XIII]

wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each  $R^{20}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{20}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{18}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{19}$  may be a

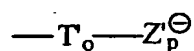
substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring. G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>23'</sup>)-; and (3) -N(R<sup>23'</sup>R<sup>24'</sup>)-; R<sup>21'</sup>-R<sup>24'</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or  
 5 branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyls, cycloalkyls, and heterocyclic rings; provided that any of R<sup>18'</sup>, R<sup>19'</sup>, R<sup>21'</sup>-R<sup>24'</sup> may be joined together with any other of R<sup>18'</sup>, R<sup>19'</sup>, R<sup>21'</sup>-R<sup>24'</sup> to form part of a common ring; any geminal R<sup>21'</sup> - R<sup>22'</sup> may combine to form a carbonyl; any vicinal R<sup>21'</sup> - R<sup>24'</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>21'</sup> - R<sup>24'</sup> may combine to form a substituted or unsubstituted  
 10 fused unsaturated moiety; and wherein any one group of substituents R<sup>21'</sup> - R<sup>24'</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

g) oxaziridinium zwitterions, which have a net charge of from about +3 to about -3, that are represented by formula [XIV]:

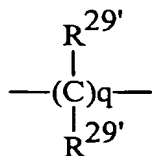


[XIV]

wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>26'</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy  
 20 radicals, and any two vicinal R<sup>26'</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>25'</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; the radical  
 25 represented by the formula:

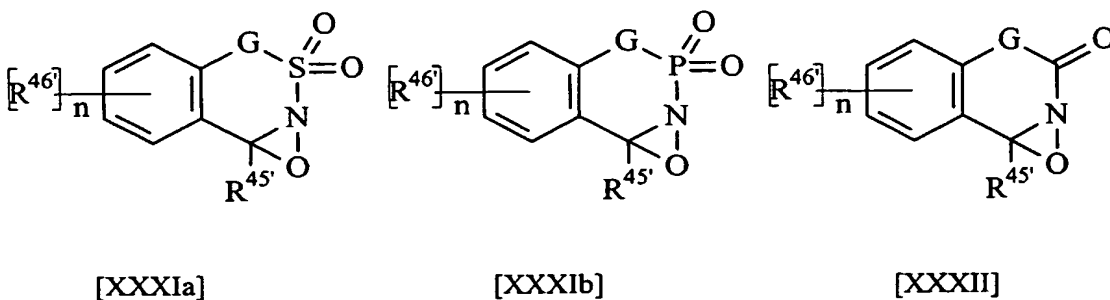


where Z'<sub>p</sub><sup>-</sup> is covalently bonded to T'<sub>o</sub>, and Z'<sub>p</sub><sup>-</sup> is selected from the group consisting of -CO<sub>2</sub><sup>-</sup>, -SO<sub>3</sub><sup>-</sup>, -OSO<sub>3</sub><sup>-</sup>, -SO<sub>2</sub><sup>-</sup> and -OSO<sub>2</sub><sup>-</sup>, and a is either 1 or 2; T'<sub>o</sub> is selected from the group consisting of:



wherein q is an integer from 1 to 8; R<sup>29'</sup> is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>30'</sup>)-; and (3) -N(R<sup>30'</sup>R<sup>31'</sup>)-; R<sup>27'</sup>, R<sup>28'</sup>, R<sup>30'</sup> and R<sup>31'</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of R<sup>25'</sup>, R<sup>26'</sup>, R<sup>27'</sup>, R<sup>28'</sup>, R<sup>30'</sup> and R<sup>31'</sup> may be joined together with any other of R<sup>25'</sup>, R<sup>26'</sup>, R<sup>27'</sup>, R<sup>28'</sup>, R<sup>30'</sup> and R<sup>31'</sup> to form part of a common ring; any geminal R<sup>27'</sup>-R<sup>28'</sup> may combine to form a carbonyl; any vicinal R<sup>27'</sup>-R<sup>31'</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>27'</sup>-R<sup>31'</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety;

h) oxaziridine sulfonimines [XXXIa], phosphonimines [XXXIb], N-acylimines [XXXII] are represented as follows:



wherein each R<sup>46'</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>46'</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>45'</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; G, when present,

is selected from the group consisting of: (1) -O- ; (2) -N(R<sup>47'</sup>)-; and (3) -N(R<sup>47'</sup>R<sup>48'</sup>)-; R<sup>47'</sup>-R<sup>48'</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyl, cycloalkyl, and heterocyclic rings; and

5 i) mixtures thereof.

4. The method according to Claim 1 wherein said fabric comprises a stain.

5. A bleaching composition comprising

- 10 (a) a peroxygen source; and  
(b) an organic catalyst;

wherein the organic catalyst becomes available in a wash solution containing said bleaching composition by a controlled availability method.

15 6. The bleaching composition according to Claim 5 wherein said peroxygen source is selected from the group consisting of:

- (i) preformed peracid compounds selected from the group consisting of percarboxylic acids and salts, percarbonic acids and salts, perimidic acids and salts, peroxymonosulfuric acids and salts, and mixtures thereof, and  
20 (ii) hydrogen peroxide sources selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and mixtures thereof, and a bleach activator.

7. The bleaching composition according to Claim 6 wherein said peroxygen source is  
25 selected from hydrogen peroxide sources selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and mixtures thereof, and a bleach activator.

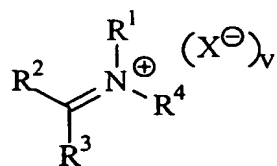
8. The bleaching composition according to Claim 7 wherein said bleach activator is selected  
30 from the group consisting of hydrophobic bleach activators.

9. The bleaching composition according to Claim 7 wherein said bleach activator is selected from the group consisting of tetraacetyl ethylene diamine (TAED), benzoylcaprolactam (BzCL), 4-nitrobenzoylcaprolactam, 3-chlorobenzoylcaprolactam, benzoyloxybenzenesulphonate (BOBS),  
35 nonanoyloxybenzenesulphonate (NOBS), phenyl benzoate (PhBz),

decanoyloxybenzenesulphonate (C<sub>10</sub>-OBS), benzoylvalerolactam (BZVL), octanoyloxybenzenesulphonate (C<sub>8</sub>-OBS), perhydrolyzable esters, 4-[N-(nonanoyl) amino hexanoyloxy]-benzene sulfonate sodium salt (NACA-OBS), lauryloxybenzenesulphonate (LOBS or C<sub>12</sub>-OBS), 10-undecenoyloxybenzenesulfonate (UDOBS or C<sub>11</sub>-OBS with unsaturation in the 10 position), decanoyloxybenzoic acid (DOBA) and mixtures thereof.

10. The bleaching according to Claim 5 wherein said organic catalyst is selected from the group consisting of:

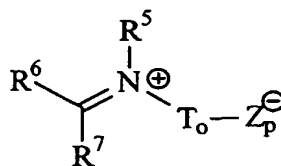
a) aryliminium cations and aryliminium polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [I]:



[I]

where R<sup>1</sup>-R<sup>2</sup> are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>1</sup> and R<sup>4</sup> are selected from substituted or unsubstituted, saturated or unsaturated radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals; and X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

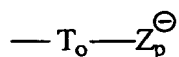
b) aryliminium zwitterions, which have a net charge of from about +3 to about -3, that are represented by the formula [II]:



[II]

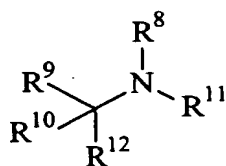
where R<sup>5</sup>-R<sup>7</sup> are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro,

halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:

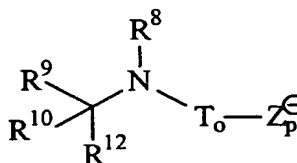


where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and p is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

c) modified amines, which have a net charge of from about -3 to about +3, that are represented by formulas [V] and [VI]:

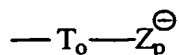


[V]



[VI]

where  $R^9$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^8$  and  $R^{11}$ , when present, are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; and the radical represented by the formula:

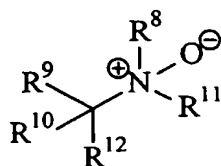


where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of

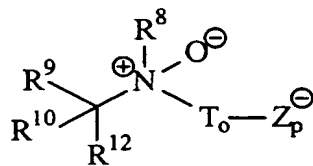


$-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$  and  $p$  is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

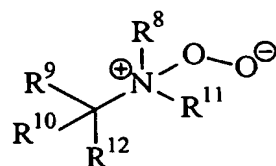
d) modified amine oxides, which have a net charge of from about -3 to about +3, that are represented by formulas [VII]-[X]:



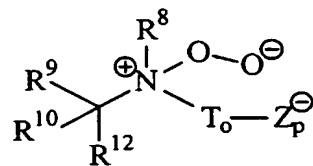
[VII]



[VIII]

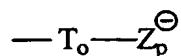


[IX]



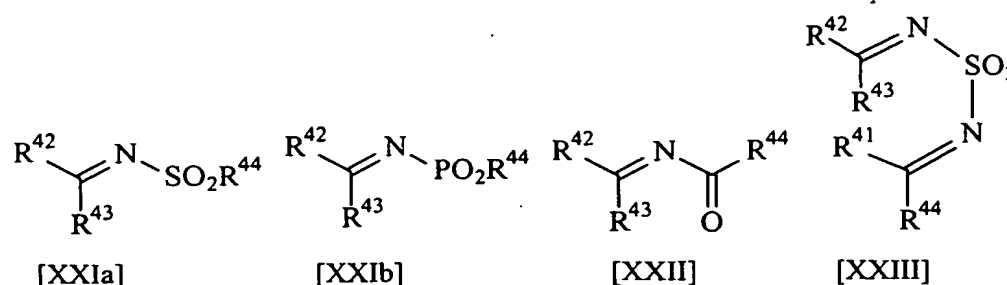
[X]

where  $\text{R}^9$ - $\text{R}^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $\text{R}^8$  and  $\text{R}^{11}$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $\text{R}^{12}$  is a leaving group, the protonated form of which has a  $\text{pK}_a$  value ( $\text{H}_2\text{O}$  reference) that falls within the following range:  $37 > \text{pK}_a > -2$ ; with the proviso that any  $\text{R}^8$ - $\text{R}^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; and also present in this formula is the radical represented by the formula:



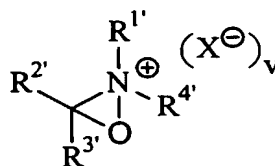
where  $\text{Z}_p^-$  is covalently bonded to  $\text{T}_o$ , and  $\text{Z}_p^-$  is selected from the group consisting of  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$  and  $p$  is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

e) sulfonimines, phosphonimines, N-acylimines and thiodiazole dioxides that are represented by the formulas [XXIa], [XXIb], [XXII] and [XXIII], respectively:



where  $\text{R}^{41}$ - $\text{R}^{44}$ , when present, are independently selected from substituted or unsubstituted, saturated or unsaturated radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; provided that any of  $\text{R}^{41}$ - $\text{R}^{44}$  may be joined together with any other  $\text{R}^{41}$ - $\text{R}^{44}$  to form part of a common ring, including a fused aryl, fused carbocyclic or fused heterocyclic ring;

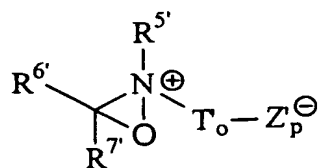
f) oxaziridinium cations and polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [III]:



[III]

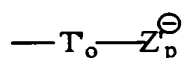
where  $\text{R}^{2'}$ - $\text{R}^{3'}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $\text{R}^{1'}$  and  $\text{R}^{4'}$  are radicals selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto and carboalkoxy radicals; and  $\text{X}^-$  is a suitable charge-balancing counterion; and  $v$  is an integer from 1 to 3;

g) oxaziridinium zwitterions, which have a net charge of from about +3 to about -3, that are represented by formula [IV]:



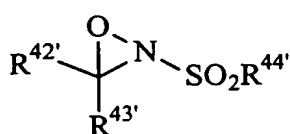
[IV]

where  $\text{R}^{5'}$ - $\text{R}^{7'}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:

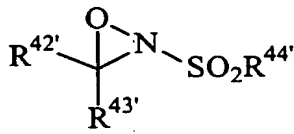


where  $\text{Z}_p^\ominus$  is covalently bonded to  $\text{T}_o$ , and  $\text{Z}_p^\ominus$  is selected from the group consisting of  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$  and p is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring;

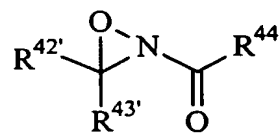
h) oxaziridine sulfonylmines [XXIVa], phosphonimines [XXIVb], N-acylimines [XXV] and thiodiazole dioxides [XXVI] and [XXVII] are represented as follows:



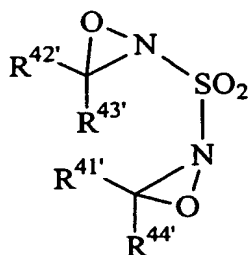
[XXIVa]



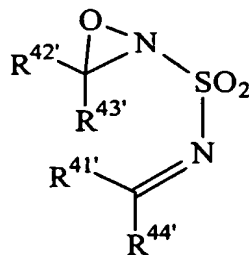
[XXIVb]



[XXV]



[XXVI]



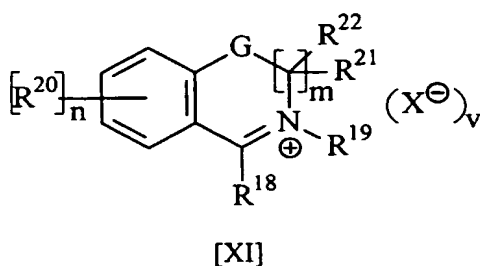
[XXVII]

where  $\text{R}^{41'}$ - $\text{R}^{44'}$ , when present, are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic,

carboalkoxy radicals, provided that any of R<sup>41'</sup>-R<sup>44'</sup> may be joined together with any other R<sup>41'</sup>-R<sup>44'</sup> to form part of a common ring, including a fused aryl, fused carbocyclic or fused heterocyclic ring; i) mixtures thereof.

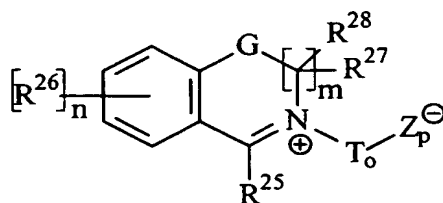
11. The bleaching composition according to Claim 10 wherein the organic catalyst is selected from the group consisting of:

a) aryliminium cations and aryliminium polyions, which have a net charge of from about +3 to about -3, that are represented by the formula [XI]:



where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each R<sup>20</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>20</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>18</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>19</sup> is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated, H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>23</sup>)-; and (3) -N(R<sup>23</sup>R<sup>24</sup>)-; R<sup>21</sup>-R<sup>24</sup> are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched C<sub>1</sub>-C<sub>12</sub> alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyl, cycloalkyl, and heterocyclic rings; provided that any of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> may be joined together with any other of R<sup>18</sup>, R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup>-R<sup>24</sup> to form part of a common ring; any geminal R<sup>21</sup>-R<sup>22</sup> may combine to form a carbonyl; any vicinal R<sup>21</sup>-R<sup>24</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>21</sup>-R<sup>24</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety; X<sup>-</sup> is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

b) aryliminium zwitterions, which have a net charge of from about +3 to about -3, that are represented by the formula [XII]:



[XII]

- 5 where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4; each  $R^{26}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{26}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{25}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; also present in this formula is the radical represented by the formula:



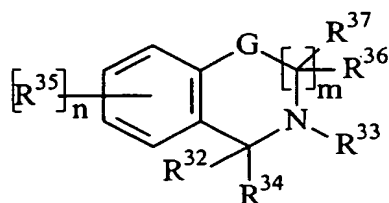
where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:



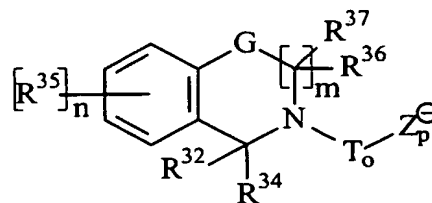
- wherein  $q$  is an integer from 1 to 8;  $R^{29}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups;  $G$  is selected from the group consisting of: (1)  $-O-$ ; (2)  $-N(R^{30})-$ ; and (3)  $-N(R^{30}R^{31})-$ ;  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{25}$ ,  $R^{26}$ ,  $R^{27}$ ,  $R^{28}$ ,  $R^{30}$  and  $R^{31}$  may be joined together with any other of  $R^{25}$ ,

R<sup>26</sup>, R<sup>27</sup>, R<sup>28</sup>, R<sup>30</sup> and R<sup>31</sup> to form part of a common ring; any geminal R<sup>27</sup> - R<sup>28</sup> may combine to form a carbonyl; any vicinal R<sup>27</sup> - R<sup>31</sup> may join to form unsaturation; and wherein any one group of substituents R<sup>27</sup> - R<sup>31</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety;

5 c) modified amines that are represented by the formulas [XV] and [XVI]:

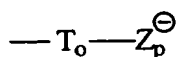


[XV]



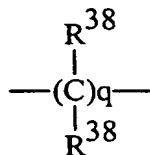
[XVI]

10 where m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; R<sup>34</sup> is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy, peralkoxy, carboxylic, percarboxylic, sulfonato and persulfonato radicals; each R<sup>35</sup> is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl,  
 15 heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal R<sup>35</sup> substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring; R<sup>32</sup> may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; R<sup>33</sup> may  
 20 be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:



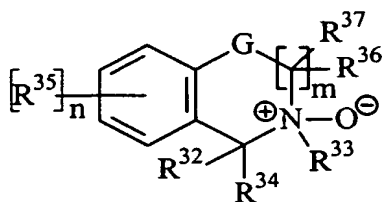
25

where Z<sub>p</sub><sup>-</sup> is covalently bonded to T<sub>o</sub>, and Z<sub>p</sub><sup>-</sup> is selected from the group consisting of -CO<sub>2</sub><sup>-</sup>, -SO<sub>3</sub><sup>-</sup>, -OSO<sub>3</sub><sup>-</sup>, -SO<sub>2</sub><sup>-</sup> and -OSO<sub>2</sub><sup>-</sup>, and a is either 1, 2 or 3; T<sub>o</sub> is selected from the group consisting of:

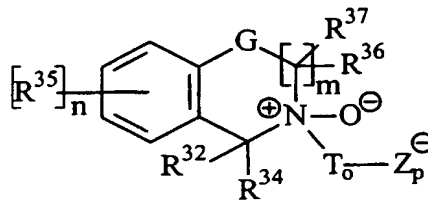


wherein  $q$  is an integer from 1 to 8;  $\text{R}^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups;  $G$  is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{39})-$ ; and (3)  $-\text{N}(\text{R}^{39}\text{R}^{40})-$ ;  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxy, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may be joined together with any other of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  to form part of a common ring; any geminal  $\text{R}^{36}$ - $\text{R}^{37}$  may combine to form a carbonyl; any vicinal  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

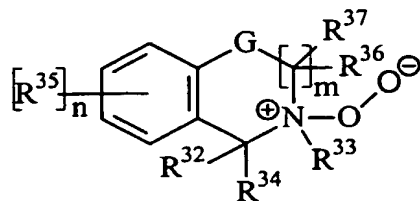
d) modified amine oxides that are represented by formulas [XVII]-[XX]:



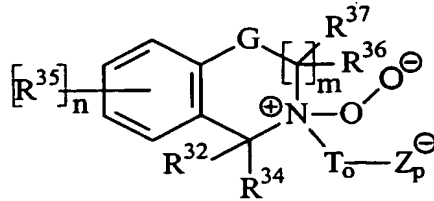
[XVII]



[XVIII]



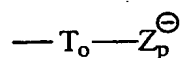
[XIX]



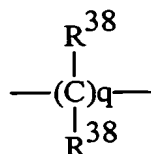
[XX]

where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $\text{R}^{34}$  is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy, peralkoxy, carboxylic, percarboxylic,

sulfonato and persulfonato radicals; each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, and also present in this formula is the radical represented by the formula:



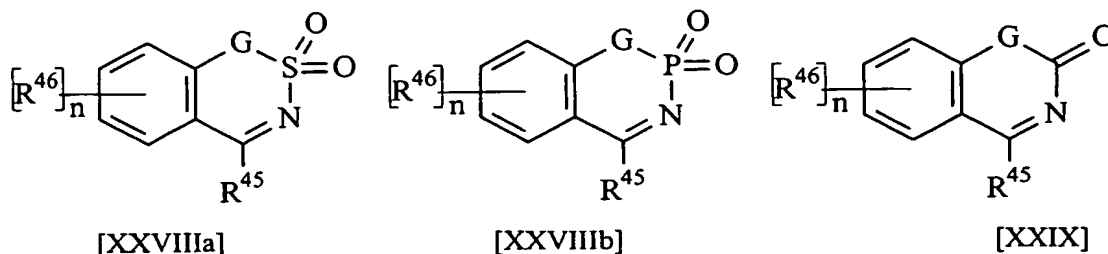
where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$ , and a is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:



wherein q is an integer from 1 to 8;  $R^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups; G is selected from the group consisting of: (1) -O-; (2) -N( $R^{39}$ )-; and (3) -N( $R^{39}R^{40}$ )-;  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may be joined together with any other of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  to form part of a common ring; any geminal  $R^{36}$ - $R^{37}$  may combine to form a carbonyl; any vicinal  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may join to form unsaturation; and wherein any one group of substituents  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

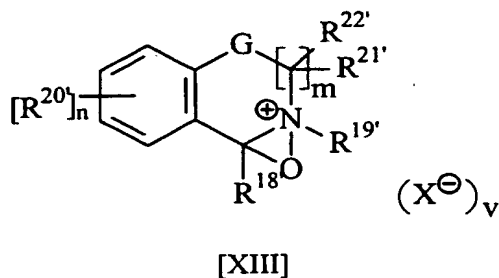


e) sulfonimines [XXVIIIa], phosphonimines [XXVIIIb], N-acylimines [XXIX] are represented as follows:



wherein each  $R^{46}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{46}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{45}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; G, when present, is selected from the group consisting of: (1) -O-; (2) -N( $R^{47}$ )-; and (3) -N( $R^{47}R^{48}$ )-;  $R^{47}$ - $R^{48}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched  $C_1$ - $C_{12}$  alkyls, alkenes, alkoxy, aryls, alkaryl, aralkyl, cycloalkyls, and heterocyclic rings; and n is an integer from 0 to 4;

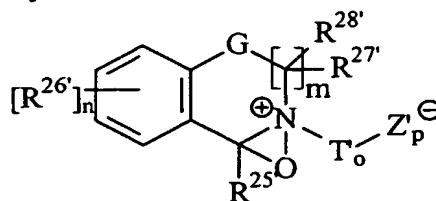
f) oxaziridinium cations and polyions, which have a net charge of from about +3 to about -3, that are represented by formula [XIII]:



wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each  $R^{20'}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{20'}$  substituents may combine to form a fused aryl, fused

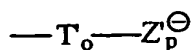
carbocyclic or fused heterocyclic ring;  $R^{18'}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals;  $R^{19'}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl and heterocyclic ring. G is selected from the group consisting of: (1) -O-; (2) -N( $R^{23'}$ )-; and (3) -N( $R^{23'}R^{24'}$ )-;  $R^{21'}$ - $R^{24'}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched  $C_1$ - $C_{12}$  alkyls, alkylenes, alkoxy, aryls, alkaryls, aralkyls, cycloalkyls, and heterocyclic rings; provided that any of  $R^{18'}$ ,  $R^{19'}$ ,  $R^{21'}$ - $R^{24'}$  may be joined together with any other of  $R^{18'}$ ,  $R^{19'}$ ,  $R^{21'}$ - $R^{24'}$  to form part of a common ring; any geminal  $R^{21'}$  -  $R^{22'}$  may combine to form a carbonyl; any vicinal  $R^{21'}$  -  $R^{24'}$  may join to form unsaturation; and wherein any one group of substituents  $R^{21'}$  -  $R^{24'}$  may combine to form a substituted or unsubstituted fused unsaturated moiety; and wherein any one group of substituents  $R^{21'}$  -  $R^{24'}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;  $X^-$  is a suitable charge-balancing counterion; and v is an integer from 1 to 3;

g) oxaziridinium zwitterions, which have a net charge of from about +3 to about -3, that are represented by formula [XIV]:

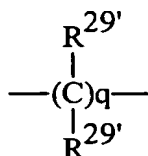


[XIV]

wherein m is 1 to 3 when G is present and m is 1 to 4 when G is not present; and n is an integer from 0 to 4; each  $R^{26'}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $R^{26'}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{25'}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; the radical represented by the formula:



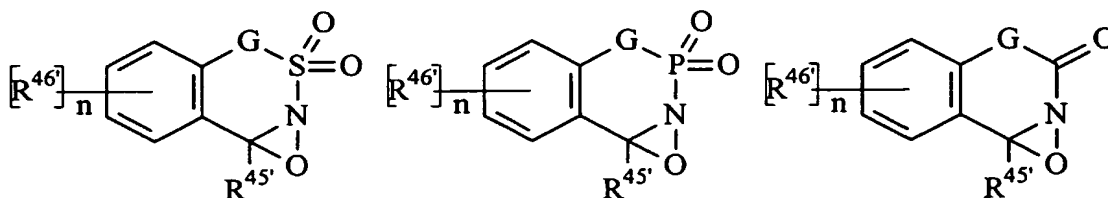
where  $Z'_p$  is covalently bonded to  $T'_o$ , and  $Z'_p$  is selected from the group consisting of  $-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$ , and  $a$  is either 1 or 2;  $T'_o$  is selected from the group consisting of:



5

wherein  $q$  is an integer from 1 to 8;  $\text{R}^{29'}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups;  $G$  is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{30'})-$ ; and (3)  $-\text{N}(\text{R}^{30'}\text{R}^{31'})-$ ;  $\text{R}^{27'}$ ,  $\text{R}^{28'}$ ,  $\text{R}^{30'}$  and  $\text{R}^{31'}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxy, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{25'}$ ,  $\text{R}^{26'}$ ,  $\text{R}^{27'}$ ,  $\text{R}^{28'}$ ,  $\text{R}^{30'}$  and  $\text{R}^{31'}$  may be joined together with any other of  $\text{R}^{25'}$ ,  $\text{R}^{26'}$ ,  $\text{R}^{27'}$ ,  $\text{R}^{28'}$ ,  $\text{R}^{30'}$  and  $\text{R}^{31'}$  to form part of a common ring; any geminal  $\text{R}^{27'}$ - $\text{R}^{28'}$  may combine to form a carbonyl; any vicinal  $\text{R}^{27'}$ - $\text{R}^{31'}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{27'}$ - $\text{R}^{31'}$  may combine to form a substituted or unsubstituted fused unsaturated moiety;

h) oxaziridine sulfonimines [XXXIa], phosphonimines [XXXIb], N-acylimines [XXXII] are represented as follows:



[XXXIa]

[XXXIb]

[XXXII]

25

wherein each  $\text{R}^{46'}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals, and any two vicinal  $\text{R}^{46'}$  substituents may combine to form a fused aryl, fused

carbocyclic or fused heterocyclic ring;  $R^{45'}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxylic, and carboalkoxy radicals; G, when present, is selected from the group consisting of: (1) -O-; (2) -N( $R^{47'}$ )-; and (3) -N( $R^{47'}$  $R^{48'}$ )-;  $R^{47'}$ -  
 5  $R^{48'}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, linear or branched  $C_1$ - $C_{12}$  alkyls, alkylenes, alkoxys, aryls, alkaryls, aralkyls, cycloalkyls, and heterocyclic rings; and n is an integer from 0 to 4; and

i) mixtures thereof.

- 10 12. The bleaching composition according to Claim 5 wherein said bleaching compound further comprises one or more of the following detergent components selected from the group consisting of: surfactants, solvents, buffers, enzymes, soil release agents, clay soil removal agents, dispersing agents, brighteners, suds suppressors, fabric softeners, suds organic catalysts, enzyme stabilizers, builders, chelants, other bleaching agents, including metal catalysts, other  
 15 organic catalysts, dyes, dye transfer inhibiting agents, perfumes and mixtures thereof.

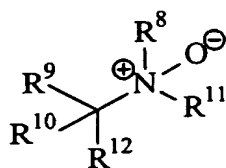
13. A product comprising an organic catalyst, the product further including instructions for using said compound to clean a fabric in need of cleaning, the instructions including the step of contacting said fabric with a wash solution comprising the product wherein the organic catalyst  
 20 becomes available in said wash solution by a controlled availability method.

14. The product according to Claim 13 wherein said product is a laundry detergent.

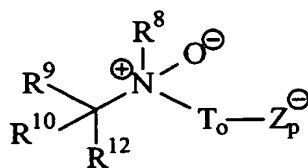
15. The product according to Claim 13 wherein said product is a laundry additive.

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16. A modified amine compound selected from the group consisting of modified amine oxides having the general formula [VII] - [X]:

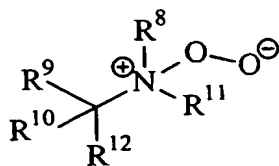


[VII]

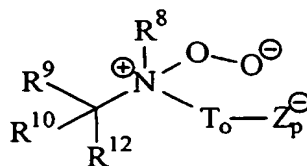


[VIII]

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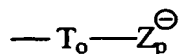
[IX]



[X]

- where  $R^8$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto, carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{11}$ , when present, is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto, carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring.

17. The modified amine compound according to Claim 16 wherein  $R^{11}$  is represented by the formula:



- where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring.

18. The modified amine compound according to Claim 18 wherein for  $R^{12}$ , the  $pK_a$  value is greater than 3 and less than 23.

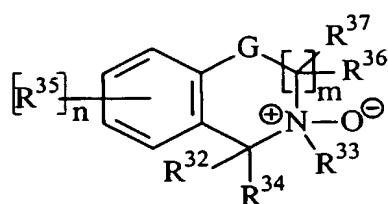
19. The modified amine compound according to Claim 17 wherein for  $R^{12}$ , the  $pK_a$  value is greater than 9 and less than 21.

20. The modified amine compound according to Claim 18 wherein for  $R^{12}$ , the  $pK_a$  value is greater than 11 and less than 17.

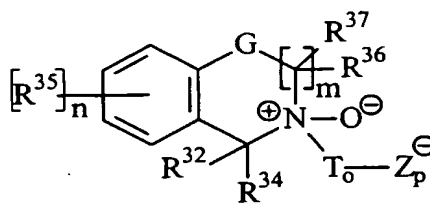
21. The modified amine compound according to Claim 16 wherein  $R^{12}$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy and peralkoxy radicals.

22. The modified amine compound according to Claim 21 wherein said  $R^{12}$  is selected from the group consisting of hydroxy or perhydroxy.

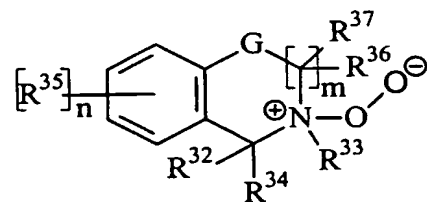
23. The modified amine compound according to Claim 16 wherein said modified amine compound has the general formula [XVII] - [XX].



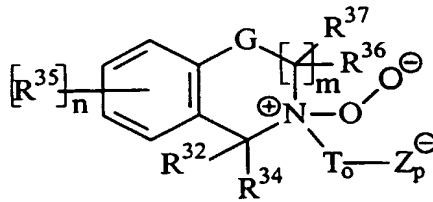
[XVII]



[XVIII]



[XIX]

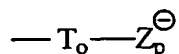


[XX]

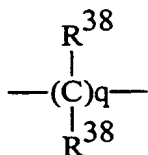
where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $R^{34}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxyl, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxyl, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated,

radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, including anionic and/or cationic charge carrying radicals.

24. The modified amine compound according to Claim 23 wherein R<sup>33</sup> is represented by the  
5 formula:



10 where Z<sub>p</sub><sup>-</sup> is covalently bonded to T<sub>o</sub>, and Z<sub>p</sub><sup>-</sup> is selected from the group consisting of -CO<sub>2</sub><sup>-</sup>, -SO<sub>3</sub><sup>-</sup>, -OSO<sub>3</sub><sup>-</sup>, -SO<sub>2</sub><sup>-</sup> and -OSO<sub>2</sub><sup>-</sup>, and p is either 1, 2 or 3; T<sub>o</sub> is selected from the group consisting of:



15 wherein q is an integer from 1 to 8; R<sup>38</sup> is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups; G is selected from the group consisting of: (1) -O-; (2) -N(R<sup>39</sup>)-; and (3) -N(R<sup>39</sup>R<sup>40</sup>)-; R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> are substituted or unsubstituted radicals independently  
20 selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxy, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of R<sup>32</sup>, R<sup>33</sup>, R<sup>34</sup>, R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may be joined together with any other of R<sup>32</sup>, R<sup>33</sup>, R<sup>34</sup>, R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> to form part of a common ring; any geminal R<sup>36</sup>-R<sup>37</sup> may combine to form a carbonyl; any vicinal R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may join  
25 to form unsaturation; and wherein any one group of substituents R<sup>36</sup>, R<sup>37</sup>, R<sup>39</sup> and R<sup>40</sup> may combine to form a substituted or unsubstituted fused unsaturated moiety.

25. The modified amine compound according to Claim 23 wherein for R<sup>34</sup>, the pK<sub>a</sub> value is greater than 3 and less than 23.

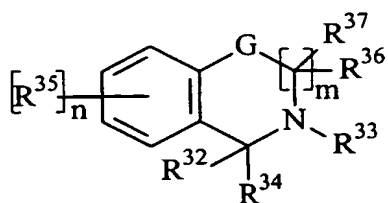
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26. The modified amine compound according to Claim 25 wherein for R<sup>34</sup>, the pK<sub>a</sub> value is greater than 11 and less than 17.

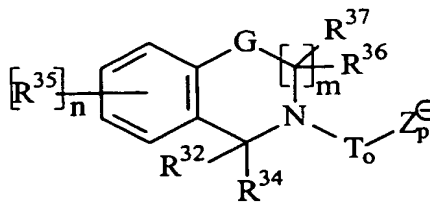
27. The modified amine compound according to Claim 23 wherein  $R^{34}$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy and peralkoxy radicals.

28. The modified amine compound according to Claim 27 wherein  $R^{34}$  is selected from the group consisting of hydroxy or perhydroxy radicals.

29. The modified amine compound according to Claim 16 wherein said modified amine compound has the general formula [XV] - [XVI].



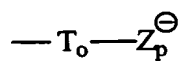
[XV]



[XVI]

where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $R^{34}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $20 > pK_a > 10$ ; each  $R^{35}$  is independently selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxyl, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  is a radical selected from the group consisting of H or Me;  $R^{33}$  is a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of C3 - C18 alkyl, C3 - C18 cycloalkyl and anionic and/or cationic charge-carrying radicals.

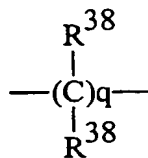
30. The modified amine compound according to Claim 29 wherein  $R^{33}$  is represented by the formula:



where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of



$-\text{CO}_2^-$ ,  $-\text{SO}_3^-$ ,  $-\text{OSO}_3^-$ ,  $-\text{SO}_2^-$  and  $-\text{OSO}_2^-$ , and p is either 1, 2 or 3;  $\text{T}_o$  is selected from the group consisting of:

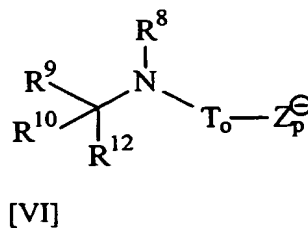
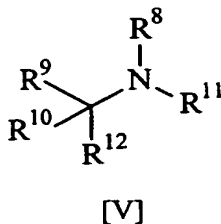


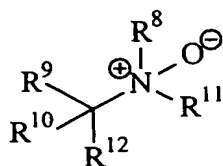
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wherein q is an integer from 1 to 8;  $\text{R}^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups; G is selected from the group consisting of: (1)  $-\text{O}-$ ; (2)  $-\text{N}(\text{R}^{39})-$ ; and (3)  $-\text{N}(\text{R}^{39}\text{R}^{40})-$ ;  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  are substituted or unsubstituted radicals independently selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may be joined together with any other of  $\text{R}^{32}$ ,  $\text{R}^{33}$ ,  $\text{R}^{34}$ ,  $\text{R}^{35}$ ,  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  to form part of a common ring; when G is present, any geminal  $\text{R}^{36}$ ,  $\text{R}^{37}$  may combine to form a carbonyl; any vicinal  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may join to form unsaturation; and wherein any one group of substituents  $\text{R}^{36}$ ,  $\text{R}^{37}$ ,  $\text{R}^{39}$  and  $\text{R}^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety.

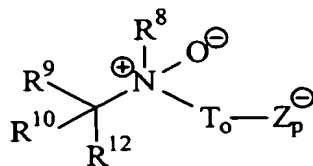
31. The modified amine compound according to Claim 29 wherein  $\text{R}^{34}$  is selected from the group consisting of hydroxy or perhydroxy radicals.

32. A bleaching composition comprising a modified amine compound in conjunction with or without a peroxygen source, wherein said modified amine compound is selected from the group consisting of modified amines having the general formula [V] and/or [VI], modified amine oxides having the general formula [VII] - [X], and mixtures thereof:

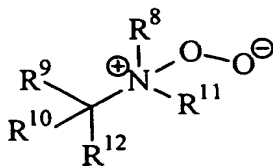




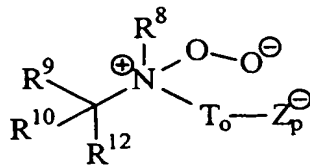
[VII]



[VIII]



[IX]

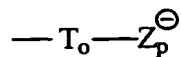


[X]

5

where  $R^8$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto, carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{11}$ , when present, is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto, carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring.

33. The bleaching composition according to Claim 32 wherein  $R^{11}$  is represented by the formula:



where  $Z_p^{\ominus}$  is covalently bonded to  $T_o$ , and  $Z_p^{\ominus}$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring.

34. The bleaching composition according to Claim 32 wherein for  $R^{12}$ , the  $pK_a$  value is greater than 3 and less than 23.

35. The bleaching composition according to Claim 34 wherein for  $R^{12}$ , the  $pK_a$  value is greater than 9 and less than 21.

36. The bleaching composition according to Claim 35 wherein for  $R^{12}$ , the  $pK_a$  value is about greater than 11 and about less than 17.

37. The bleaching composition according to Claim 32 wherein  $R^{12}$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy and peralkoxy radicals.

38. The bleaching composition according to Claim 37 wherein  $R^{12}$  is selected from the group consisting of hydroxy or perhydroxy radicals.

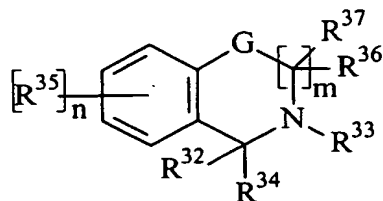
39. The bleaching composition according to Claim 32 wherein said modified amine compound comprises from about 0.001% to about 10% by weight of said composition, and said peroxygen source, when present, comprises from about 0.01% to about 60% by weight of said composition.

40. The bleaching composition according to Claim 32 wherein said peroxygen source, when present, is selected from the group consisting of:

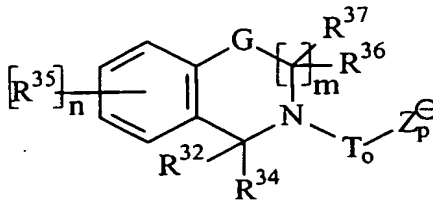
(a) preformed peracid compounds selected from the group consisting of percarboxylic acids and salts, percarbonic acids and salts, perimidic acids and salts, peroxymonosulfuric acids and salts, and mixtures thereof;

(b) hydrogen peroxide sources selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and mixtures thereof; and a bleach activator.

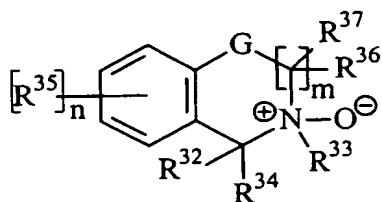
41. A bleaching composition wherein said modified amine compound has the general formula [XV] - [XX].



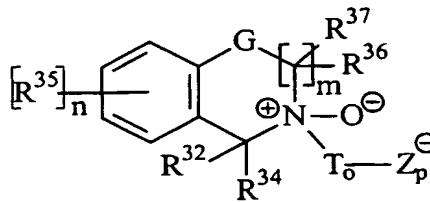
[XV]



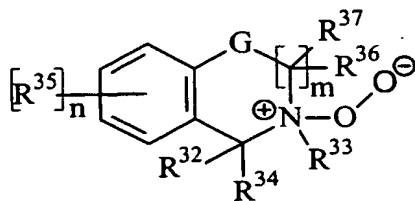
[XVI]



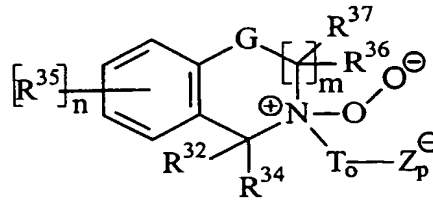
[XVII]



[XVIII]



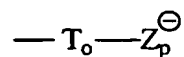
[XIX]



[XX]

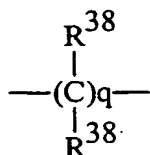
- where  $m$  is 1 to 3 when  $G$  is present and  $m$  is 1 to 4 when  $G$  is not present; and  $n$  is an integer from 0 to 4;  $R^{34}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; each  $R^{35}$  is independently selected from a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, aryl, fused aryl, heterocyclic ring, fused heterocyclic ring, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxyl, and carboalkoxy radicals, and any two vicinal  $R^{35}$  substituents may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring;  $R^{32}$  may be a substituted or unsubstituted radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, sulfonato, alkoxy, keto, carboxyl, and carboalkoxy radicals;  $R^{33}$  may be a substituted or unsubstituted, saturated or unsaturated, radical selected from the group consisting of H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, heterocyclic ring, including anionic and/or cationic charge carrying radicals.

42. The bleaching composition according to Claim 41 wherein  $R^{33}$  is represented by the formula:



where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of

- 5  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$ , and p is either 1, 2 or 3;  $T_o$  is selected from the group consisting of:



- 10 wherein q is an integer from 1 to 8;  $R^{38}$  is independently selected from substituted or unsubstituted radicals selected from the group consisting of linear or branched H, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkylene, heterocyclic ring, alkoxy, arylcarbonyl, carboxyalkyl and amide groups; G is selected from the group consisting of: (1) -O-; (2) -N( $R^{39}$ )-; and (3) -N( $R^{39}R^{40}$ )-;  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  are substituted or unsubstituted radicals independently  
15 selected from the group consisting of H, oxygen, alkyl, cycloalkyl, alkaryl, aryl, aralkyl, alkenes, heterocyclic ring, alkoxys, arylcarbonyl groups, carboxyalkyl groups and amide groups; any of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may be joined together with any other of  $R^{32}$ ,  $R^{33}$ ,  $R^{34}$ ,  $R^{35}$ ,  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  to form part of a common ring; any geminal  $R^{36}$ - $R^{37}$  may combine to form a carbonyl; any vicinal  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may join  
20 to form unsaturation; and wherein any one group of substituents  $R^{36}$ ,  $R^{37}$ ,  $R^{39}$  and  $R^{40}$  may combine to form a substituted or unsubstituted fused unsaturated moiety.

43. The bleaching composition according to Claim 41 wherein for  $R^{34}$ , the  $pK_a$  value is greater than 3 and less than 23.

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44. The bleaching composition according to Claim 43 wherein for  $R^{34}$ , the  $pK_a$  value is greater than 11 and less than 17.

45. The bleaching composition according to Claim 41 wherein  $R^{34}$  is selected from the group  
30 consisting of substituted or unsubstituted, saturated or unsaturated hydroxy, perhydroxy, alkoxy and peralkoxy radicals.

46. The bleaching composition according to Claim 45 wherein R<sup>34</sup> is selected from the group consisting of hydroxy or perhydroxy radicals.

47. The bleaching composition according to Claim 32 wherein said bleaching composition further comprises one or more of the following detergent components selected from the group consisting of: surfactants, solvents, buffers, enzymes, soil release agents, clay soil removal agents, dispersing agents, brighteners, suds suppressors, fabric softeners, suds boosters, enzyme stabilizers, builders, chelants, other bleaching agents, dyes, dye transfer inhibiting agents, perfumes and mixtures thereof.

48. The bleaching composition according to Claim 47 wherein said bleaching composition further comprises a surfactant.

49. The bleaching composition according to Claim 48 wherein said surfactant is a branched surfactant.

50. The bleaching composition according to Claim 49 wherein said branched surfactant is a mid-chain branched surfactant.

51. The bleaching composition according to Claim 48 wherein said surfactant is an anionic surfactant.

52. The bleaching composition according to Claim 41 wherein said bleaching composition further comprises a chelating agent.

53. The bleaching composition according to Claim 41 wherein said bleaching composition further comprises other bleaching agents selected from the group consisting of perborates, percarbonates, perphosphates and mixtures thereof.

54. The bleaching composition according to Claim 53 wherein said bleaching composition further comprises a bleach activator.

55. The bleaching composition according to Claim 54 wherein said bleach activator is selected from the group consisting of hydrophobic bleach activators.

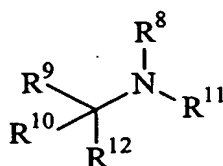
56. The bleaching composition according to Claim 55 wherein said hydrophobic bleach activators are selected from the group consisting of tetraacetyl ethylene diamine (TAED), benzoylcaprolactam (BzCL), 4-nitrobenzoylcaprolactam, 3-chlorobenzoylcaprolactam, benzoyloxybenzenesulphonate (BOBS), nonanoyloxybenzenesulphonate (NOBS), phenyl benzoate (PhBz), decanoyloxybenzenesulphonate (C<sub>10</sub>-OBS), benzoylvalerolactam (BZVL), octanoyloxybenzenesulphonate (C<sub>8</sub>-OBS), perhydrolyzable esters, 4-[N-(nonanoyl) amino hexanoyloxy]-benzene sulfonate sodium salt (NACA-OBS), lauryloxybenzenesulphonate (LOBS or C<sub>12</sub>-OBS), 10-undecenoyloxybenzenesulfonate (UDOBS or C<sub>11</sub>-OBS with unsaturation in the 10 position), decanoyloxybenzoic acid (DOBA) and mixtures thereof.

57. The bleaching composition according to Claim 41 wherein said bleaching composition further comprises an enzyme.

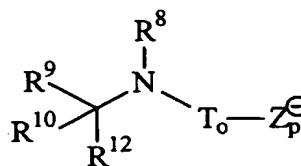
58. The bleaching composition according to Claim 57 wherein said enzyme is selected from the group consisting of cellulases, lipases, amylases, phospholipases, proteases, peroxidases and mixtures thereof.

59. A method for laundering a fabric in need of cleaning, said method comprises contacting said fabric with a laundry solution having a bleaching composition according to Claim 32.

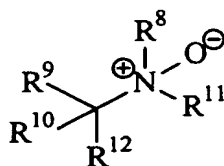
60. A laundry additive product comprising a modified amine compound selected from the group consisting of modified amine compounds having the general formula [V] - [X], and mixtures thereof:



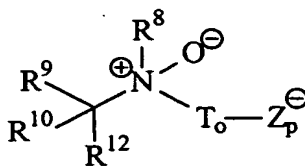
[V]



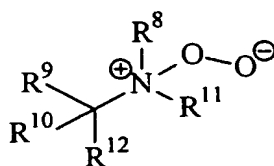
[VI]



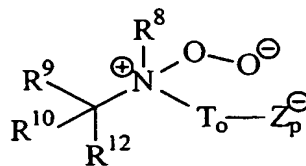
[VII]



[VIII]



[IX]



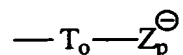
[X]

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where  $R^8$ - $R^{10}$  are independently selected from substituted or unsubstituted radicals selected from the group consisting of H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto, carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{11}$ , when present, is a radical selected from the group consisting of substituted or unsubstituted, saturated or unsaturated H, alkyl, cycloalkyl, aryl, alkaryl, aralkyl, heterocyclic ring, silyl, nitro, halo, cyano, alkoxy, keto, carboalkoxy radicals and anionic and/or cationic charge carrying radicals;  $R^{12}$  is a leaving group, the protonated form of which has a  $pK_a$  value ( $H_2O$  reference) that falls within the following range:  $37 > pK_a > -2$ ; with the proviso that any  $R^8$ - $R^{12}$ , when present, may combine to form a fused aryl, fused carbocyclic or fused heterocyclic ring.

61. The laundry additive product according to Claim 60 wherein  $R^{11}$  is represented by the formula:

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where  $Z_p^-$  is covalently bonded to  $T_o$ , and  $Z_p^-$  is selected from the group consisting of  $-CO_2^-$ ,  $-SO_3^-$ ,  $-OSO_3^-$ ,  $-SO_2^-$  and  $-OSO_2^-$  and  $p$  is either 1, 2 or 3;  $T_o$  is selected from the group consisting of substituted or unsubstituted, saturated or unsaturated alkyl, cycloalkyl, aryl, alkaryl, aralkyl, and heterocyclic ring.

62. The laundry additive product according to Claim 60, wherein said laundry additive product is in a dosage form selected from the group consisting of a pill, tablet, caplet, gelcap or other single dosage form.

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63. The laundry additive product according to Claim 60 wherein said laundry additive product further includes a suitable carrier.